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## Cincinnati society of natural history.

*Aug. 5.*—Mr. U. P. James presented a paper on conodonts and fossil annelid jaws from the lower Silurian of south-western Ohio. The only annelid heretofore noticed from these rocks in Ohio is that described by Prof. G. B. Grinnell in *Amer. journ. sc.*, September, 1877, under the name of *Nereidavus varians*, and referred to the jaw apparatus of an annelid. Mr. James has discovered other forms which are similar in character. They occur as small, dark, shining objects, varied in form, and detached from each other, of a glossy black tint, though changed by weathering to a rusty red. They are composed of chitinous matter, and undergo no change in nitric acid. Mr. James has identified some of the forms with species described by Mr. G. J. Hinde. Conodonts were first noticed by Pander, in 1856, and have been referred to as fish-teeth. Though their zoölogical relations cannot be finally determined until found in position, the best authorities agree in thinking them the lingual armature of large naked mollusks. Dr. Newberry has described conodonts from the Cleveland shale of the Waverly group in Ohio, and Mr. Hinde figures forms from the Silurian of Canada, and Devonian of the United States. They are now identified from the Cincinnati group of Ohio, some of the forms being identical with those from Canada and England. —Mr. Charles Dury stated that he thought the Oswego and black bass (*Micropterus dolemieu* and *M. nigricans*) were but forms of one species. The black bass is always found in swift-running streams, while the Oswego bass inhabits sluggish waters, ponds, and lakes. The Oswego bass is of a much larger size, lighter color, and has a larger mouth, than the black bass: hence the name of the white or large-mouthed bass. Ross Lake, an artificial pond near Cincinnati of about forty acres, was stocked a few years ago with black bass. It now swarms with the other form. Though many specimens of *M. dolemieu* have been taken, not a single *M. nigricans* has been caught, as far as known. Other instances were cited in which the large-mouthed species had appeared in ponds which were stocked with the small-mouthed form. Mr. Dury concluded that the Oswego bass is a variety of the black species, due to a difference in habit and to a superabundance of food. Dr. W. A. Dun said that he had caught the large-mouthed species in the Kanawha River, under the falls, though he thought that Mr. Dury's conclusion was in the main correct. Dr. D. S. Young agreed with Mr. Dury. He said, that, as far as color was concerned, he had observed that to vary with the season. The fish were of a lighter color in summer and in warm water than in winter and in cool water. He had caught the large-mouthed bass in rapid-flowing streams, under circumstances which showed that they had probably escaped from overflowed ponds or dams.

## NOTES AND NEWS.

THE McGill university convocation conferred upon the following members of the British association, at

its final meeting in Montreal, the honorary degree of LL.D.: Lord Rayleigh, the Governor-general of Canada, Sir Lyon Playfair, Sir William Thomson, Professor Bonney, Professor Frankland, Captain Douglas Galton, A. G. Vernon Harcourt, Sir Henry E. Roscoe, Professor Blanford, Professor Moseley, General Lefroy, Sir Richard Temple, Sir Frederick Bramwell, Dr. E. B. Tylor; also upon the president of Toronto university, Professor Daniel Wilson, Professor Asa Gray of Harvard, and Professor James Hall, New York state geologist.

—At the recent meeting of the British association in Montreal, the general committee appropriated to scientific purposes certain grants of money for the ensuing year, amounting in all to £1,515. In the department of *mathematics and physics*, the largest sum (£100) is devoted to the calculation of mathematical tables; £70 is to be used in the investigations on meteoric dust; synoptic charts of the Indian ocean and meteorological observations on Ben Nevis each receive £50; one-half this sum is devoted to meteorological observations near Chester; £20 is given for the study of solar radiation, and £10 for the reduction of tidal observations in the English channel. In *chemistry*, £25 is devoted to vapor pressures and refractive indices of salt solutions, £20 to physical constants of solutions, and £5 to chemical nomenclature. In *geology*, for volcanic phenomena of Vesuvius, £25; for the Raygill fissure, £15; for earthquake phenomena of Japan, £75; for fossil Phyllopoda of the British paleozoic rocks, £25; for fossil plants of British tertiary and secondary beds, £50; for geological record, £50; for erosion of sea-coasts in England, £10; for circulation of underground waters in England, £10. In *biology*, for a table at the zoölogical station at Naples, £100; for a record of zoölogical literature, £100; for observations on the migration of birds, at light-houses and light-ships in England, £30; for an exploration of Kilimanjaro and the adjoining mountains of equatorial Africa, £25; for recent Polyzoa, £10; for the marine biological station at Granton, Scotland, £100; for marine biological stations on the coast of the United Kingdom, £150. In *geography*, appropriations were made for the exploration of New Guinea by Mr. Forbes to the amount of £200; and the exploration of Mount Roraima, in Guiana, by im Thurn, £100. In the department of *mechanics*, £5 was devoted to patent legislation. In *anthropology*, £50 is to be used for the investigation of characteristics, physical and otherwise, of the north-western tribes of Canada; and £10 for the study of the physical characteristics of races in the British isles.

—The *Annuaire* of the bureau of longitudes of Paris for 1884 (p. 847) contains M. Janssen's report on the French expedition to observe the total solar eclipse of 1883, May 6. The text of this report has been previously printed in the *Comptes rendus*; and it is referred to here principally to call attention to the photograph of the corona given on p. 852, which did not accompany the report in the first instance. This photograph was made with a camera, mounted

equatorially, which had an objective of eight inches aperture, and a focal length of about forty-seven inches. The exposure was over five minutes.

The diameter of the sun is about three-eighths of an inch, and the coronal outline is in general quite thirty minutes from the sun's limb. Streamers extend more than twice this distance from the limb.

There is no great amount of detail in this picture, as was to be expected; and we shall look for the publication of the photographs of shorter exposure with interest.

One important fact is stated by M. Janssen; to wit, that, so far as his photographs have been examined, they show no trace of an intra-mercurial planet.

— Mr. Cochery, the French minister of posts and telegraphs, according to the *Science monthly*, reports to the French academy of sciences, that there were in France, during the first half of the year 1883 (from the beginning of January to the end of June), the following strokes of lightning. In January there was a stroke injuring a man who carried an open umbrella with metal ribs. In February there were no strokes at all. In March there were four strokes, damaging unprotected buildings and a high oak-tree. In April there were only four strokes, injuring several persons, some poplar trees, a weathercock, a bell-tower, and an isolated building. In May there were twenty-eight strokes, killing two men, seven cattle, three horses, and injuring several persons and two horses, as well as numerous trees and houses. The trees were oaks, chestnuts, poplars; and several of the strokes attacked the chimneys of the houses. It is notable that a gilt wooden figure of Christ in front of the church of Bonsecours (Seine inférieure) was struck, although the church has a lightning-rod on it. During the month of June the total number of strokes largely increased; there being no less than a hundred and thirteen, or from three to four a day. The daily number varied during the month, but was, if any thing, larger at the end than at the beginning of the month. Seven men were killed. About forty persons — men, women, and children — were injured. Some seventy animals were killed, including fifty sheep and a dog. Many trees, oaks, poplars, elms, firs, were struck. A common object struck is the bell of some church, the chimney of some house, or the weathercock of a barn. Some of the strokes were received by the lightning-rods of buildings, and did no harm, except, perhaps, fusing the point of the rod. On the other hand, several accidents to buildings, and in one case death to a horse, occurred within a comparatively short distance of a lightning-rod (from fifty to eighty metres). Isolated trees, and animals under them, appeared to have suffered most. Rain and hail accompanied most of the storms.

— Mr. Frederick John Smith writes to the *Electrical review* as follows:—

“Considerable trouble has been felt by those who are engaged in practical problems connected with secondary batteries, arising from imperfections in the cells for holding the dilute acid, and also from the fact that the plates of a charged secondary battery cannot be lifted out of the liquid, in order that any required area may be exposed to the action of the acid, without the rest

of the reduced lead on the kathode plates being at once acted on by the oxygen of the air. To meet these difficulties, I have carried out the following methods: The cells are made of common pottery-ware about two centimetres thick. All sharp corners should be avoided in the moulding of the cells, because they do not stand the process of cooling well, while rounded corners seldom crack during cooling. These rough porous cells are warmed slowly in an oven, to such a temperature that paraffine-wax melts easily when rubbed against them. The cells, on being removed from the oven, are partly filled with paraffine-wax: this is made to run well over the whole inner surface of the cell. As soon as the wax begins to set, it is poured out, and the cell is put away to cool. A cell so made stands acid well; and the dilute acid does not creep up the sides of the cell, as it does in the common glazed cell. Another method, used at an earlier date than the one just mentioned, was to make deal boxes of the size required, and place inside them card-boxes (held out by sand), so that there was a space of about one centimetre between them. This space was filled with common paraffine-wax; then, the card-box being removed, a perfect lining of wax was left. This method is more costly than the last, but has the advantage of greater strength. The test of two years' constant use has shown that both these forms of secondary battery cells are both practical and lasting. When using a secondary battery in the laboratory, it would sometimes be convenient to be able to expose only some part of the plates to the action of the dilute acid; but, as things now are, this cannot be done without the part of the plates which are lifted out being at once acted on by the oxygen of the air. To prevent this action taking place, the plates are drawn out of the liquid into the vapor of benzol (after several experiments with different gases, this appeared to answer well, and to be easily managed). By this means the injurious action mentioned is prevented, and any required amount of surface of plate may be exposed to the action of the dilute acid.”

— The *Revue scientifique* states, that, notwithstanding the ravages caused by the Phylloxera, France is the country which furnishes commerce with the greatest quantity of wine. Of the hundred and fifteen millions of hectolitres produced by Europe in 1881, France furnished thirty-four millions; while the average from Italy, Spain, and Austrian Hungary was only from twenty to twenty-five millions, and that of Germany, Portugal, Turkey, Greece, Roumania, and Switzerland, varied from four millions in Portugal, to one million in Switzerland. At present France supplies its lack of harvest by importing wines which it again exports, doctored, and mixed with its own. It receives wines especially from Spain, Italy, Portugal, and Greece. It treats the settlings, the residuum of the native harvest, with sugar, alcohol, and water, and thus makes wines known as the ‘second vat.’ It also makes wine of raisins received from neighboring high countries and from Syria. To the raisins, softened in water, sugar and alcohol are added, one kilogram of raisins yielding from three to four litres of a harmless wine. This manufacture is carried on especially at Marseilles, at Cette, at Bordeaux, and at Bercy. The importation of raisins into France amounts to seventy thousand tons, representing thirty eight million francs: these raisins give about three million hectolitres of wine. The wines of the second vat amount to about the same quantity.

— Victor Giraud writes from Karema in good health. He had spent a month on Lake Bangweolo, where several errors of the charts of Livingstone were corrected, among others the position of the Luapulu River, which really comes out of the south-west part of the lake, instead of the north-west. This part of

the work was undertaken with eight men, the remainder of the caravan waiting for Giraud near Kazembe. Harassed by the natives, their boat was finally abandoned near the cataract of Mombottuta. At ten days' march they reached the chief of the Muaumi, who detained them in semi-captivity two months. Finally escaping, they crossed Itahua, and reached Tanganika and Karema by the 14th of February last. Giraud intended to remain there about a month, then to return to M'para, and attempt to reach Leopoldville by traversing Marungu and the Lualaba on about the 6th parallel.

— Bishop Levinhac has left Tabora, and is momentarily expected at Zanzibar. The stations under his supervision were flourishing at last accounts, as were those of the Pères du Saint-Esprit.

— 'Bird nomenclature of the Chippewa Indians' is the heading of an instructive linguistic article inserted by W. W. Cooke in the July number of the *Auk*. The Ojibwē names of one hundred and twenty-six birds, most of them with their etymologies, are enumerated in this paper; and it may be safely said that only a naturalist can obtain the Indian equivalents of so many species with so much accuracy as we see it done by Cooke. These Indians give names to all winter residents, since at that time bird-life is so scarce that each one is accurately noticed; but of summer residents they know with distinctness only those hunted for food.

As stated by Cooke, nearly one-half of the bird names given by Bishop Baraga in his celebrated Ojibwē dictionary have wrong definitions. If true, this will go to show, that, to take down correctly the Indian equivalents for objects of nature, the collector has to be a linguist and a naturalist at the same time; but it is by no means certain that the Indian names of birds and other animals do not sometimes shift from one object to another similar one. Ridgway, Cope, Gabb, and others have paid considerable attention to the gathering of Indian terms of natural history; and it is desirable that other naturalists follow their example, giving the etymology of each name, if traceable.

— Many local names occurring along the Mosel and the Middle Rhine have, through their quaint and foreign sounds, proved attractive to historians and linguists. Hubert Marjan, their most recent investigator, has just published the fourth instalment of his critical researches (*Rheinische Ortsnamen*, 39 p.) on the subject, in which he follows the only true method to disclose the origin of names, which is the historic one. The early orthographies of names, as found in Roman authors and in the more ancient mediæval parchments, necessarily come nearer to the original forms than the name-forms we use to-day: hence Marjan bases his conclusions upon the earlier forms, and in the majority of instances his results meet our approval. The most ancient topographic names of these parts are Celtic; but the names of Low-Latin and Romance origin far exceed the Celtic ones in number, the German names being late additions. Thus Nehren is derived from *nucaria (silva)*, 'walnut-

grove;' Tholey from *tilietum*, 'linden-grove;' Kärmeten from *carpinetum*, 'horn-beech grove;' Zons from *uncia*, 'agricultural field;' Ülpenich from *Ulpus*, a man's name. In the mountainous tracts of the Hunsrück, Maifeld, and Eifel, our author discovers a considerable sprinkling of Slavic names, but neglects to follow up their etymons through all the eight or ten Slavic dialects known to us. The existence of Slavic names in these western countries is explained by the historic fact, that, after a Gothic war, the emperor Constantinus settled three hundred thousand Sarmatae in various parts of the Roman dominions, a part of which can be historically traced to the Hunsrück and to the plateau of Langres in France (about A.D. 334). Prof. A. Bacmeister had previously (1870) attempted to trace local names of Bavaria and eastern Würtemberg to a Slavic origin.

— We reproduce from *La Nature* a cut illustrating an experiment which shows the pressure of the air most markedly. A thin strip of board is rested on the edge of a table, its inner end being covered by a



sheet of paper, as shown. When arranged in this manner, it will be found that a sharp blow may be given the board, without effect, even if it would fall of its own weight without the paper.

— At a meeting of the Royal astronomical society on June 13, Mr. Ranyard read a paper on the cause of blurred patches in instantaneous photographs of the sun. If the image of a bright star in a reflecting telescope is observed out of focus, ripples of light may be seen passing across the bright disk, which is really an image of the speculum, with the flat projected on its centre. That these ripples are due to the unequal refraction of heated air-currents, Mr. Ranyard showed by placing a hot iron in the tube of the telescope, which increases the distinctness of the ripples, as well as the velocity with which they move across the image. In the image of a uniform bright disk, their effect is to give rise to areas of greater and less brightness, which float across the field as the heated air rises. This was proved by means of instantaneous photographs of the sun, taken with a heated iron in the mouth of the telescope, and when the sun was near to the heated roof of a house.

—An announcement is made in the *English mechanic*, that oil-bearing strata exist in the neighborhood of Sibi, southern Afghanistan; and the government have determined to procure the necessary machinery for boring-operations, which, it is said, will be commenced next winter.

—Mr. C. L. Prince of Crowborough has presented to the Royal astronomical society a great rarity in the shape of a copy of Sherburne's poetical translation of Marcus Manilius, 1675. The volume is valuable for the extensive list of oriental astronomers it contains, and as an English translation of Manilius's *Astronomicum poeticon*. Mr. Knobel said that for six years he had searched all the booksellers' catalogues without finding it. The library of the Royal observatory, Greenwich, came into possession of a copy by purchase four or five months ago, and it may seem not a little remarkable that two copies of so rare a work should come to light almost at the same time.

—A full list of the papers at the International conference on education, in connection with the International health exhibition, appeared in *Nature* for July 10.

—Number xiii. of the signal-service professional papers, recently issued, contains the results of an extended investigation by Professor William Ferrel on the 'Temperature of the atmosphere and earth's surface.' This is Mr. Ferrel's first memoir completed since his engagement under the chief signal-officer: it is characterized by the same comprehensive mathematical treatment of physical problems that marked the 'Meteorological researches' which he undertook a few years ago for the coast-survey. The broad subject of meteorological temperature is arranged under four headings, — first, the relative distribution of solar radiation on the earth's surface (the mean vertical intensity of solar radiation for one day at the top of the atmosphere is here tabulated for twenty-four epochs in the year, and for every ten degrees of latitude in the northern hemisphere); second, the conditions determining the relations between the intensities of solar radiation and the resulting temperatures, in which the diathermance of the atmosphere is considered; third, the general subject of actinometry, in which two series of experiments give the mean solar constant as 2.255 and 1.991, and from these, compared with others, the value 2.2 is taken as most probable (it is here concluded that stellar heat is insignificant, and that there is no sensible temperature of space; fourth, the distribution of temperature on the earth's surface, and its variations, where, among many conclusions, there may be mentioned the determination of  $-100^{\circ}$  C. as the approximate mean temperature of the earth without an atmosphere; 0.213 as the share of dark heat radiated vertically from the earth's surface, which escapes through the atmosphere into space; and the difference between mean equatorial and polar temperatures on a dry-land earth at considerably more than  $115^{\circ}$  C., ocean-currents being chiefly responsible for diminution of this extreme condition.

—The English bark *Churchstow*, Capt. Adams, reports that in a voyage to Columbo, Ceylon, she fell in with large quantities of pumice-stone, Feb. 29, 1884, in latitude  $18^{\circ}$  south, longitude  $73^{\circ}$  east. The pumice-stone was partly covered with barnacles.

—It seems that Mr. Cailletet has perfected his method for liquefying oxygen; since this body may be obtained in sufficiently large quantities to appear in the form of a colorless liquid, very volatile, and much resembling liquefied sulphurous acid. The author began by liquefying ethylene by the aid of solid carbonic acid and pressure. By means of this he liquefied formene; and, by the cold produced during the evaporation of the formene, oxygen was finally liquefied.

—*Nature* states that the educational statistics of Japan for the past year show that the number of common schools throughout the country is 29,081, being an increase of 339 as compared with the preceding year; while the number of scholars is 3,004,187, an increase of 396,960; and the number of teachers is 84,765, being an increase of 8,147.

—Miss Amelia Edwards, the honorary secretary of the 'Egypt exploration fund,' has made a communication in the *Academy* about the remains of the statue of Ramses II., found by Mr. Petrie at Tanis. These remains are of red granite. The statue of Ramses II., the contemporary of Moses, was overturned by one of his successors, Sheshank III. By an exact examination and photography of all which was found, Mr. Petrie has come to the conclusion that the statue must have had a height of a hundred and fifteen feet, and thus exceeded all the monuments of that sort hitherto known. The great toe of the statue has a circumference of a foot and a half.

—From a communication of Dr. S. Glasenapp, of the Imperial university at St. Petersburg, to the Russian newspapers, there are in Russia, as we learn from *Nature*, the following private observatories: one at Pervin, near Torjok, in the government of Tver, belonging to Gen. Maievsky; another at Bunakovka, in the government of Kharkoff, belonging to Prince Liven; and one at Odessa, belonging to Mr. Gildesheim. A Polish gentleman, Mr. Wucziowski, is building a private observatory at Belkave, near Breslau; and a Russian gentleman, W. P. Engelhardt, has a fine observatory at Dresden, equipped with an excellent twelve-inch refractor and a large spectroscope, as well as a selection of the best physical instruments.

—Professor Milne of Japan, says the *Athenaeum*, has established in the Iakashima coal-mine, near Nagasaki, an underground, or, as he prefers to call it, a catachthonic, observatory. This colliery is worked for some considerable distance under the sea; and it is purposed to establish a regular system of observations on temperature and pressure, and on the tides, earth-tremors, and the escape of gas, carefully noting if any connection exists between them, and establishing a comparison between surface and subterranean phenomena.

—An interesting statistical statement on the use of shorthand-writing has been issued by the U. S.

bureau of education as the second of its series of circulars for 1884, accompanied by a bibliography of the subject so far as American and English authors are concerned, containing about fourteen hundred titles. More than as many German works are known, and publications are abundant in other countries. A comparative view of a hundred and twelve alphabets from 1602 to 1882 is given on a single sheet. The use of shorthand has largely increased in the United States within the past five years. In Washington the management of some of our scientific bureaus, on their present extended scale, would be almost impossible without it. Certainly the efficiency of bureau service is vastly increased by its use.

— The April number of *Memorie della Società degli spettroscopisti italiani* contains a paper by Dr. J. Hilfiker, entitled "Première étude sur les observations du diamètre du soleil faites à l'Observatoire de Neuchâtel de 1862 à 1883," in which these observations are discussed with reference to a supposed variation in the apparent angular diameter of the sun, due to or coincident with the periodicity of the solar spots. The evidence seems to point toward the coincidence of the lesser diameters with the epoch of maximum spottedness of the sun's surface.

— The rain-band spectroscope has a rival in the scintillation of the stars, as shown by the studies of Mr. Ch. Montigny (*Bull. acad. roy. Belg.*, April, 1884). He finds that blue scintillations are more frequent on the approach of rain, and considers this the result of the greater quantity of water in the upper atmosphere. On the basis of the recent continued diminution of blue scintillations, the author ventures the prediction for Belgium, that the series of rainy years beginning with 1876 is now happily ended, and that a series of drier years is about to begin. The observations are of value, but the extension of their conclusions so far into the future does not seem justified.

— P. Tacchini has recently issued two reports of his studies in connection with rainfall. — *Nota sulla osservazioni pluviometriche eseguite nelle stazioni forestali di Vallombrosa e di Cansiglio*; *Le febbri malariche e le meteore nella provincia di Roma*: Roma, 1884. The first exhibits the results of rain-measures from 1872 to 1880 in open fields and under trees. The ratio of the latter to the former was from 0.74 to 0.64 under fir-trees, and 0.76 under beech-trees, and the ratio of loss increased in months of less rainfall. These ratios are, however, open to variation; as they depend on only a single gauge for the beech-trees, and on but two for the fir-trees.

The relation of malarial fevers to the weather in the province of Rome is a more extended study. A series of tables gives, first the number of cases of fever in the various parts of the province recorded for the third quarter of each of the twelve years from 1871 to 1882; then the percentages of fever to population, showing an average annual ratio of 6.077 per cent, falling to minima of 2.93 in 1878, and 2.49 in 1882, and reaching a maximum of 11.42 in 1879. These figures are next compared with rainfall, cloudiness, temperature, and winds; and there is found a clear

correspondence between the fall of rain in March, April, and May, and the fevers of July, August, and September; an inverse relation between the cloudiness in June, July, and August, and the fevers of the third quarter; a minimum of fever with a maximum of sirocco winds; and certain indistinct relations of the other elements. All these results are well indicated in diagrams, as well as in tables. They give an increased value to the careful study of rainfall.

— The *Electrical review* states that the Jablochhoff electric candle, the pioneer of all arc-lighting on a practical scale, has ceased, after a period of more than five and a half years, to illuminate the Thames embankment, by reason of the termination of the contract with the Metropolitan board of works. The lights were put up in 1878 for a three-months' trial: consequently the works were not of a permanent character. Yet the lights, with the exception of a few occasional mishaps, have given general satisfaction. No more exposed position could have been selected for such a trial, and the successful working of the system under the circumstances still further proves its value. It is an open secret that the price (one and a half pence per hour per lamp) paid for the lights resulted in a considerable loss to the company. From the recent address of Sir J. Bazalgette at the opening meeting of the Institution of civil engineers this season, it appears that twice the illuminating-power is obtained on the embankment from the Jablochhoff lights as could have been obtained from gas, if the same money were expended: in other words, the price should have been threepence per hour, as compared with the same light from gas.

— According to the *Revue scientifique*, June 21, a distinguished officer of the French army has studied the recently discovered coal-beds in Algeria, and who gives interesting details in the following passage from a letter to the Geographical society of Paris:—

It was at Bou-Saada, that I first heard of the coal reported to be found in Algeria. Coal is found all along the *oued* Bou-Saada, — a large river meandering through a country formed of almost vertical (80°) strata of reddish limestone. These strata lie parallel to the course of the river, so that it seems often to flow between two quite regular walls, whose summits are worn by the winter rains. This formation belongs, I believe, to the lower cretaceous. The traces of coal visible in the strongly eroded croppings which form the bed of the river are very slight (from .001 of a metre to .002 of a metre): they seem inseparable from the grayish-blue, sandy strata, which, at least in the exposed portions, are very small. This sandstone is hard and compact, often spangled with bright grains, which are, without doubt, iron pyrites. These are the first indications of the beds in question.

Mr. Pinard, who devoted himself to an examination of this bed, had shafts sunk at the places where he had determined the presence of croppings. There are three of these shafts, — two very near each other, 3.5 kilometres from the oasis toward the south, on the left bank of the *oued*; and the third is a half-kilometre

farther. At my visit all were filled with water, so that I could study only what had been removed from them. The excavations consisted of sandstone like that mentioned, and of large pieces of marne, black sandstone, foliated, and enclosing thin strata of coal, which in some places measured .01 of a metre in thickness. Rumors of the officers stationed at Bou-Saada state that pieces of rather hard coal have been taken from the shafts, and that the stratum encountered was at times almost a metre thick. This coal, on breaking, is bright, compact, and of a good appearance, burns well, with a beautiful flame, and gives a light, brilliant coke.

— The Prussian minister of instruction has published an opinion on the overwork in schools through the medical deputation sent to him on the subject. The evil exists not only in the upper and middle classes of the high schools, but in the earlier school years. It is strongly recommended that pupils should not be received into the elementary schools until the completion of their seventh year, and not into the gymnasial sexta until their tenth year.

— The new German orthography, supposed to be more phonetic than the old, is to be made official next year in the Grand Duchy of Oldenburg.

— Two important geographical works are projected at St. Petersburg. One is, according to Professor Veniukoff, the preparation of a grand monograph on the physical geography of European Russia. Several members of the imperial geographical society have been constituted a committee to elaborate the project.

The second is the preparation of a good general map of the same region, for the use of the public, to replace that issued by the society in 1863. The selection of matters to be omitted or retained is to be made by specialists, and approved by an editorial commission. The execution will be in the highest style of cartography.

The report on the unification of Russian geodetic and topographic work has been elaborated by the commission, and submitted to the general government for approval.

— Revoil has returned to Zanzibar from his explorations among the Somalis. Although prevented by a state of things resulting from the disturbances in the Sudan from carrying out his original plans, he made good use of his forced sojourn at Guelidi and on the Benadir coast. He devoted his attention to the archeology and natural history of this region, and has brought back valuable collections and notes on the resources and productions of the country.

— Ussagara mission station has been visited by famine due to drought. The Rev. Bloyet writes, that, notwithstanding this, the people about the station are well disposed.

— The work upon the canal between the gulfs of Corinth and Aegina is being energetically pushed, and another year will probably see it completed. Advantage will be taken of the vestiges of the canal begun by Nero. The trench will be a straight line, about six kilometres in length, including the basins

at either end, and crossed by two bridges. The greatest height of the ridge to be pierced is about seventy metres. The completion of the canal will shorten the distance between the Adriatic ports and those of western Turkey, — Salonica, Constantinople, Smyrna, etc., nearly two hundred miles, and for vessels from the Atlantic about half as much, beside enabling them to escape much dangerous navigation. The tariff will be fixed at one franc per ton for vessels from the Adriatic, and half a franc for others. The monthly movement of tonnage is at present about 137,000 tons, mostly in small vessels, the local trade being extremely large. The contract for cutting the canal has been taken for about five million dollars, and there is no reason to suppose that this will be exceeded.

— The important question of a port of embarkation in south-eastern Brazil for the region about the lagoon or estuary known as Lagoa dos Patos has recently been discussed by the engineers Plazolles and Sichel. On the borders of the lagoon are the important colonies of Porto Alegre, Rio Grande, and Pelotas. By steamers of light draught communication is had with an extensive interior region containing a large population. The entrance to the lagoon, however, is composed of a shallow passage obstructed by shifting sands, where the bad weather of a day may obliterate the effect of dredgings during several months. The peninsula, which extends between the lagoon and the Atlantic, has been supposed to be of a sandy or porous nature, unsuitable for permanent works. Recent investigations by the above-mentioned gentlemen show, however, that this idea is erroneous, and that the foundation of the peninsula is a compact, hard clay, well suited for excavation. These engineers propose to select a favorable spot, where a large fresh-water lake exists, to dig out a small basin at the coast capable of containing several large vessels, and to connect it, by a canal deep enough to admit the largest ships, with the above-mentioned lake, which is to be dredged out to form an extensive basin or port. As the Lagoa dos Patos is too shallow to accommodate large ships, the freight is to be transferred, by a railway eighteen kilometres long, to the point where the light-draught vessels of the lagoon can be reached. The projectors ask only an authorization to make and maintain the works without subsidy or guaranty. The *Brazilian messenger* states that it is now practically certain that this important work will be carried out, thereby giving the colonists excellent facilities for commerce, the want of which has hitherto crippled the development of a rich and healthy region.

— The government of the Argentine Confederation, in the hope of obtaining water by artesian borings, has ordered an investigation of the geology of the San Luis district. Water is generally found only at a depth of one hundred and eighty feet. Potable water is usually reached at that depth; but at Upper Pencoso only salt water was found, though at a height of fifteen hundred feet above the sea, while at Cuijades the water is hot, reaching 75° F.